NGSS alignment: *What in the World Is Happening to Our Climate?*

Disciplinary Core Ideas

The science content in the storybook is related to several DCIs such as:

- **ESS2.D: Weather and Climate (K)** Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and notice patterns over time.
- **ESS2.D: Weather and Climate (3rd grade)** Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.
- **ESS3.C: Human Impacts on Earth Systems (K)** Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.
- **ESS3.A: Natural Resources (4th grade)** Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways.

Science and Engineering Practices

The GLOBE kids in the storybook model science and engineering practices including:

- **Asking Questions and Defining Problems:** In grades K–2, this builds on prior experiences and progresses to simple descriptive questions that can be tested. In grades 3-5, this progresses to identifying testable scientific questions and the ability to ask questions that can be investigated based on patterns such as cause and effect relationships.
    - Students ask questions throughout the story, based on their observations.
- **Planning and Carrying Out an Investigation:** In grades K-2, students plan investigations with guidance and in collaboration with peers. In grades 3-5, students plan and conduct investigations collaboratively to produce data and evaluate methods and tools for collecting data.
    - The GLOBE kids measure snowfall (pages 4-5).
    - The GLOBE kids learn about instruments to measure temperature (pages 14-15).
    - The GLOBE kids measure water temperature (pages 18-19).
- **Analyzing and Interpreting Data:** K–2 students develop skills in collecting, recording, and sharing observations. In grades 3–5, this builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data, conducting multiple observations, comparing and contrasting data collected by different methods, and analyzing and interpreting data.
    - The GLOBE kids analyze snowfall data (pages 6-7).
- **Developing and Using Models:** Modeling in K–2 includes develops and using models to represent patterns in the natural world. Modeling in grades 3-5 expands to include use of models to represent events and design solutions.
    - In the book, the GLOBE kids reflect on how they used a model in school to explore whether sea level rises when ice melts in the water and when ice above the water melts (page 13).
    - During the GLOBE International Virtual Science Fair, the GLOBE kids present models that represent solutions to climate change (page 24).

- **Obtaining, Evaluating, and Communicating Information:** In grades K–2, this builds on prior experiences and uses observations and texts to communicate new information. In grades 3–5, this builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.
    - The GLOBE kids obtain and evaluate information about the greenhouse effect (pages 8-9).
    - The GLOBE kids communicate information during the Virtual Science Fair (pages 24-25).
- **Constructing Explanations and Designing Solutions:** Students use evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
    - Student projects at the GLOBE Virtual Science Fair are examples of ways that students can use evidence to construct explanations and design solutions to quell climate change (page 24-25).

Crosscutting Concepts

Several crosscutting concepts are emphasized in the storybook:

- **Patterns:** Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them
- **Cause and Effect:** Events have causes that generate observable patterns. Cause and effect relationships are routinely identified, tested, and used to explain change.
- **Stability and Change:** Things may change slowly or rapidly.
- **Connections to the Nature of Science: Science Is a Human Endeavor:** Science affects everyday life.
- **Interdependence of Science, Engineering, and Technology:** People encounter questions about the natural world every day.

Performance Expectations

The ways that the GLOBE kids explore climate in the book may serve as a model for students working on the following performance expectations.

- K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.
- 3-ESS2-2: Obtain and combine information to describe climates in different regions of the world.
- 4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Common Core ELA Standards

The storybook will address various Common Core ELA standards for *Reading: Literature* (CCSS.ELA-LITERACY.RL) and *Reading: Foundational Skills* (CCSS.ELA-Literacy.RF) depending on how the resource is used in the classroom. For example, in Kindergarten students should be able to ask and answer questions about key details in the story (addressing CCSS.ELA-LITERACY.RL.K.1) and fourth

grade students should be able to cite details from the text when explaining what the text says and drawing inferences (addressing CCSS.ELA-LITERACY.RL.4.1).